



## **Four Pillars of Plumbing Program**

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### **Case Study**

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Background;

I am a Plumbing Contractor from Perth Western Australia with more than 30 years experience specialising in the commercial plumbing sector.

Employed and assisted in the training of more than 60 apprentices over this time. Apprentices have been employed as direct indentured (employed directly with my plumbing company) and through the registered group training organisation MPA Skills.

Past President of Master Plumbers & Gas fitters of Western Australia 2003-2006

Past Western Australian Plumbing Licensing Board, Board Member 2007-2009

Past Chairman Master Plumbers Australia 2013-2016

Current Board Member MPA Skills (Group Training Organisation)

## **Training Plumbers and Gasfitters in Australia**

### **1. Introduction**

The following paper is based on apprentice plumbing training in Western Australia; however the same principles apply throughout Australia with individual state regulators responsible for their own states or territories. Australia has a population of approx 25 million people living predominately in cities and the areas near to the coast.

### **2. Regulation in Australia**

The plumbing industry in Australia is regulated by individual state licensing boards based on the Plumbing Code of Australia. As detailed below each state has its own requirement in relation to licensing plumbers and gasfitters.

Even though each state has an independent licensing body there are reciprocal arrangements in place so plumbing licenses are portable between states. If a licensed plumber moves to or works in another state from where they were originally licensed they must notify the new jurisdiction.

## **Western Australia**

### **Regulatory authorities**

Plumbers Licensing Board – Department of Consumer and Employment Protection (Water, sanitary and drainage only) [www.plumbers.wa.gov.au](http://www.plumbers.wa.gov.au)

State Energy Commission of WA (gas only) [www.energysafety.wa.gov.au](http://www.energysafety.wa.gov.au)

### **State specific regulations**

- Code of Practice for the Design, Manufacture, Installation and Operation of Aerobic Treatment Units (ATU's)
- Code of Practice for the Reuse of Greywater in Western Australia
- Gas Standards (Gasfitting and Consumer Gas Installations) Regulations 1999
- Water Services Licensing (Plumbers Licensing and Plumbing Standards) Regulations 2000
- Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974

### **Other publications**

Metropolitan Water Supply, Sewerage and Drainage By-laws 1981

## **Northern Territory**

## **Regulatory authority**

Northern Territory Plumbers and Drainers Licensing Board

[www.plumberslicensing.nt.gov.au](http://www.plumberslicensing.nt.gov.au)

Northern Territory WorkSafe (Gas) [www.worksafe.nt.gov.au](http://www.worksafe.nt.gov.au)

Department of Environment and Health [www.health.nt.gov.au](http://www.health.nt.gov.au)

## **State specific regulations**

- Northern Territory Building Act and Regulations
- Department of Health and Environment: Code of Practice for small on-site sewage and sullage treatment systems and the disposal or reuse of sewage effluent.
- Northern Territory WorkSafe – Gasfitting

## **Regulatory authority**

Office of Consumer and Business Affairs – Business and Occupational Services

[www.ocba.sa.gov.au/licensing](http://www.ocba.sa.gov.au/licensing)

## **State specific regulations**

- The Standard for Construction, Installation and Operation of Septic Tanks in South Australia
- The Standard for Construction, Installation and Operation of Septic Tanks in South Australia – Supplement A – Sand Filters
- The Standard for Construction, Installation and Operation of Septic Tanks in South Australia – Supplement B – Aerobic Wastewater Treatment Plants

# **Queensland**

## **Regulatory authority**

Plumbers and Drainers Examination and Licensing Board [www.dip.qld.gov.au](http://www.dip.qld.gov.au)

## **State specific regulations**

- Queensland Plumbing and Drainage Act 2002
- Plumbing and Drainage Regulation 2003 (Queensland)
- Standard Plumbing and Drainage Regulation 2003 (Queensland)
- Queensland Plumbing and Wastewater Code (17 June 2009)

# **New South Wales**

## **Regulatory authority**

Office of Fair Trading [www.fairtrading.nsw.gov.au](http://www.fairtrading.nsw.gov.au)

### **State specific regulations**

- NSW Code of Practice Plumbing and Drainage
- NSW Dangerous Goods (Gas Installations) Regulation 1998

### **Other publications**

- Jemena Gasfitting Rules (Feb 2009)

## **ACT**

### **Regulatory authority**

ACT Planning and Land Authority (ACTPLA) [www.actpla.act.gov.au](http://www.actpla.act.gov.au)

### **State specific regulations**

- Gas Safety Act 2000
- Gas Safety Regulation 2001
- Water and Sewerage Act 2000
- Water and Sewerage Regulations 2001
- ACT Health Act (Onsite sewerage systems)
- Building Code of Australia (Stormwater)

## **Victoria**

### **Regulatory authority**

Plumbing Industry Commission (PIC) [www.pic.vic.gov.au](http://www.pic.vic.gov.au)

### **State specific regulations**

- Australian Plumbing Code of Practice
- Worksafe Victoria Codes of Practice:
  - Prevention of Falls in Housing Construction (Code of Practice No.29, 2004)
  - Safety Precautions in Trenching Operations (Code of Practice No. 8, 1988)

### **Other publications**

- EPA Publication 891.2 – Guidelines for Environmental Management: Code of Practice – Onsite wastewater management
- EPA Publication 746.1 – Land Capability Assessment for Onsite Wastewater Management
- Requirements for Installation of Rainwater and Greywater Systems in Australia, Master Plumber and Mechanical Services Association of Australia
- Waterlines Occasional Paper No 8, August 2008

# Tasmania

## Regulatory authorities

Plumbers and Gasfitters Registration Board

[www.wst.tas.gov.au/contacts/plumbers\\_and\\_gasfitters\\_registration\\_board](http://www.wst.tas.gov.au/contacts/plumbers_and_gasfitters_registration_board)

## State specific regulations

- The Plumbers and Gasfitters Act 1951
- Plumbers and Gasfitters Regulations 2009
- Tasmanian Plumbing Code
- Plumbing Code of Australia
- Building Act 2000
- Plumbing Regulations 2004
- Workplace Health and Safety Act 1995
- Workplace Health and Safety Regulations 1998
- Gas (Safety) Regulations 2002
- Gas Act 2000
- Occupational Licensing Act 2005

### 3. Training

Training as an apprentice plumber is based on Water service, sanitary plumbing and drainage with Gasfitting, roofing, stormwater drainage, and or mechanical services are also included in some jurisdictions.

What is an Apprenticeship?

An Apprenticeship is a practical, hands on training program where you are paid while you learn. As an apprentice you are contracted to an employer to learn all about the plumbing trade and become qualified as a tradesman. The apprenticeship is a combination of on-the-job practical training and off-the-job structured training, both theoretical and practical, at a Registered Training Organisation.(RTO) The RTO can be a government run TAFE college or a private run college such as MPA Skills

The term of a Plumbing and Gasfitting apprenticeship in Western Australia and generally throughout Australia is 4 years. This includes off-the-job training. The off-the-job component in Western Australian apprenticeships are delivered under a competency based flexible training system and requires 990hrs. The number of off-the-job training hours varies from state to state. Workplace and off-the-job training and assessment procedures have been introduced based on the skills the apprentice should acquire over the term of the apprenticeship

## MPA Skills Overview

MPA Skills is a Registered Training Organisation [RTO] and train apprentices from either direct indenture or from MPA Skills Group Training Organisation [GTO], as well as providing advanced training programs.

Renowned for producing the state's best tradesmen and women, each year MPA Skills delivers a substantial number of plumbing and painting apprentices to the industry, and trains more than 1,200 students with its apprenticeship programs. MPA Skills is presently training between 40% and 45% of plumbing apprentices in Western Australia.

MPA Skills is backed by industry, so training to meet current industry needs is essential. It also runs advanced training programs so you can even go further in your career, including running your own business

MPA Skills take a holistic approach to developing careers, starting with many school based projects including Try A Trade sessions and school based pre-apprenticeships, through to Traditional pre-apprenticeship programs, with a strong emphasis on ensuring that learners get the opportunity for realistic work experience. Our apprenticeship program as with other nationally recognised qualifications conforms to the packaging rules laid out in the training packages. We also work closely with our gas regulator to ensure that permits are in place for students prior to attending training and that the requirements for on-the-job activities are facilitated with employers and apprentices. Our plumbing apprenticeship pathway runs as detailed: We cluster the unit selection to deal with particular skill sets being learned at the time.

3 Week Block	STAGE 1 Units - CPC32413 Certificate III in Plumbing
UNIT CODE	UNIT DESCRIPTION
	<b>Week 1</b>
CPCCOHS1001A	Work Safely in the construction industry (white Card)
CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
CPCPCM2043A	Carry out WHS requirements
HLTAID003	Provide basic emergency life support
CPCPCM2052A	Weld using oxy-acetylene equipment
	<b>Week 2</b>
CPCPCM2046A	Use plumbing hand and power tools
CPCPCM2045A	Handle and store plumbing materials
CPCPCM2039A	Carry out interactive workplace communication
CPCPCM2041A	Work effectively in the plumbing and services sector
	<b>Week 3</b>
CPCPCM2054A	Carry out simple concreting and rendering
CPCPCM2050A	Mark out materials
CPCPCM2048A	Cut and join sheet metal

2 Week Block	STAGE 2 Units - CPC32413 Certificate III in Plumbing
UNIT CODE	UNIT DESCRIPTION
<b>Week 1</b>	
CPCPCM2040A	Read plans and calculate plumbing quantities
CPCCCM2010B	Work safely at heights
CPCPCM2055A	Work safely on roofs
CPCCCM2008B	Erect and dismantle restricted height scaffolding
CPCPCM3023A	Fabricate and install non-ferrous pressure piping
<b>Week 2</b>	
CPCPCM2053A	Weld using manual metal arc welding equipment
CPCPCM2049A	Cut using oxy-LPG-acetylene equipment
CPCPCM2047A	Carry out levelling
RIICCM210D	Install trench support
CPCPDR2024A	Install stormwater and sub-soil drainage systems
CPCPDR2025A	Drain work site

2 Week Block	STAGE 3 Units - CPC32413 Certificate III in Plumbing
UNIT CODE	UNIT DESCRIPTION
<b>Week 1</b>	
CPCPRF3022A	Fabricate and install roof drainage components
<b>Week 2</b>	
CPCPRF2023A	Collect and store roof water
CPCPWT3025A	Install water pumpsets
CPCPWT3020A	Connect and install storage tanks to a domestic water supply
CPCPWT3024A	Install and maintain domestic water treatment equipment
CPCPCM3022A	Weld polyethylene and polypropylene pipes using fusion method

4 Week Block	STAGE 4 Units - CPC32413 Certificate III in Plumbing
UNIT CODE	UNIT DESCRIPTION
<b>Week 1</b>	
CPCPDR3021A	Plan layout of a residential sanitary drainage system
CPCPDR3022A	Install below ground sanitary drainage systems
CPCPDR2026A	Install prefabricated inspection openings and enclosures
CPCPDR2021A	Locate and clear blockages
<b>Week 2</b>	
CPCPDR2022A	Install domestic treatment plants
CPCPDR3023A	Install on-site disposal systems
CPCPSN3022A	Install discharge pipes
CPCPSN3024A	Install and fit off sanitary fixtures
<b>Week 3</b>	
CPCPWT3021A	Set out and install water services
CPCPWT3023A	Install and commission water heating systems
CPCPWT3026A	Fit off and commission heated and cold water services
<b>Week 4</b>	
CPCPWT3026A	Fit off and commission heated and cold water services
CPCPWT3022A	Install and adjust water service controls and devices
CPCPWT3027A	Connect irrigation systems from drinking water supply
CPCPGS3057A	Size consumer gas piping systems

2 Week Block	STAGE 5 Units - CPC32413 Certificate III in Plumbing
UNIT CODE	UNIT DESCRIPTION
	<b>Week 1</b>
CPCPSN3023A	Fabricate and install sanitary stacks
CPCPSN3011B	Plan layout of a residential sanitary plumbing system
	<b>Week 2</b>
CPCPSN3025A	Install pre-treatment facilities
CPCPFS3031A	Fabricate and install fire hydrant and hose reel systems
CPCPCM3021A	Flash penetrations through roofs and walls
CPCPGS3049A	Install Type A gas appliance flues

4 Week Block	STAGE 6 Units - CPC32413 Certificate III in Plumbing
UNIT CODE	UNIT DESCRIPTION
	<b>Week 1</b>
<b>Gas Revision</b> - Including Recap of the Gas Standards Regulations 1999, Gas constituents and characteristics, Gas industry workplace safety fuel gasses, Gas distribution systems & Combustion principals	
CPCPGS3048A	Install gas pressure control equipment
CPCPGS3055A	Install gas sub-meters
CPCPGS3059A	Install LPG storage of aggregate storage capacity up to 500 litres
CPCPGS3057A	Size consumer gas piping systems (Inv. Stage 5)
	<b>Week 2</b>
CPCPGS3056A	Install gas piping systems
CPCPGS3051A	Purge consumer piping
CPCPGS3061A	Install and commission Type A gas appliances
CPCPGS3052A	Maintain type A gas appliances
CPCPGS3053A	Disconnect and reconnect Type A gas appliances
CPCPGS3054A	Calculate and install natural ventilation for Type A gas appliances
CPCPGS3049A	Install Type A gas appliance flues (Inv. Stage 4)
CPCPGS3059A	Install LPG storage of aggregate storage capacity up to 500 litres
CPCPGS3046A	Install LPG systems in caravans, mobile homes and mobile workplaces
CPCPGS3047A	Install LPG systems in marine craft
	<b>Week 3</b>
<b>Practical Component</b>	
	<b>Week 4</b>
CPCPGS4011C	Design and Size consumer gas installations



All training is provided in a close approximation to real life activities at our campuses North & South of Perth WA. In addition to producing plumbing trade's persons, MPA Skills also run a number of courses for Plumbing Contractors License, Gas Installation and Gas Servicing for Plumbers wanting to take their profession to the next level. The anticipated outcome of this is that they will become employers of apprentices to train for the next generation and chose to become members of the Master Plumbers & Gasfitters Association.

MPA Skills also run assessments for migrant plumbers coming into Australia through VETASSESS working towards their Offshore Technical Skills Record. On completion, we also run Migrant gap training courses matching their skills and knowledge to WA requirements. Short courses on backflow prevention, Enviro West which is a is a short course introducing water and energy saving principles as well as discussing general issues concerning sustainability in the plumbing industry. Successful completion of this training also qualifies the student as a Water Corporation 'Waterwise Plumber' Gas Standards for application for a restricted gas permit and a course for electricians & gas fitter's for a restricted plumbing permit authorising them to disconnect, remove, install and reconnect: a compression union, a temperature/pressure relief valve, an expansion control valve. These short courses also offered at the facility.

#### **4. Regulations**

- The board or authority in each jurisdiction is responsible for licensing suitably qualified people to perform plumbing work
- Qualified people have either completed a plumbing apprenticeship or in the case of migrants from overseas have proven prior learning and passed a capstone test.
- Regulators have a system for inspecting and enforcing rectification for unlicensed or non compliant works
- The overall objective of the responsible Board is to protect the health and safety of the community by ensuring all plumbing works comply with the regulations.
- RTO's are audited by state Governments to ensure the strict levels of training are maintained

#### **5. Entry and Training Pathway**

In Western Australia an apprenticeship is required to become a Tradesperson. The options for entry are varied.

Option 1. You have prerequisite qualification in maths and English, year ten minimum; you can be offered an apprenticeship by a suitably qualified and licensed plumbing contractor or Registered Training Organisation (RTO).

Option 2. Complete a certificate II pre apprenticeship program at an RTO. Students are offered both classroom learning, hands on skills in a simulated work environment and on the job experience as part of their work placement. Work placement will run over 4 weeks within the 10 week pre apprenticeship. Pre apprentices are not guaranteed employment after completion of the course; however employers and GTO's look favourably on students who have completed the course.

Option 3. Complete a school based pre apprenticeship program for students in year 11 and 12. The 1 or 2 year program runs over the course of the academic year combining theory and practical training with work placements to gain real life experience. On completion students gain a certificate II qualification. As per a pre apprenticeship, there is no guaranteed employment after completion of the course; however employers and GTO's look favourably on students who have completed the course.

## **6. Apprentice training and beyond**

The core areas covered by a plumbing and Gasfitting apprenticeship in Western Australia are Water supply, Sanitary Plumbing, drainage and Gasfitting.

In other Australian jurisdictions specialised areas covered by the apprenticeship are roof plumbing, stormwater drainage and mechanical services.

As previously stated the apprenticeship is based on a combination of competency based units (approx 60) and time served, generally 4 years. In some jurisdictions a final exam is a requirement to complete an apprenticeship.

Once a person has successfully completed their apprenticeship in Western Australia and other jurisdictions in Australia they apply for a tradespersons license with the Plumbing Licensing Board (PLB). With a tradespersons license they can work under the supervision of a licensed plumbing contractor. After further experience (generally 2 years), training and education a tradesperson can sit for their certificate IV qualification. The examination consists of 8-10 subjects ranging from estimating, plan drawing, business, practical and theoretical plumbing units. Once the examination has been successfully completed an application can be made to the PLB for a Contractor's license. The PLB issues the license after a check on the qualification and a police clearance to ensure the applicant is a fit and proper person.

A licensed Contractor can commence his own business, and is able to employ plumbing tradespersons and apprentices.

## **7. Further Qualifications**

Additional training can be undertaken in several areas including

Backflow prevention

Enviro west, short course in water and energy savings

Gas servicing and industrial gas installation

## **8. Continued Professional Development(CPD)**

CPD is not compulsory in Western Australia but a system of voluntary professional development is being implemented with the view to bring in mandatory CPD in the future.

## **9. Risks to Reduction in Training**

Over the last several years there has been a push within Australia from some areas of Government and the building Industry to reduce the length and or scope of plumbing training. This is not a solution to the occasional short supply of qualified tradespeople. If we reduce the high level of training in Australia we risk the deterioration of the standard of plumbing works in our community. We have a high level of regulation and a high level of training within the plumbing industry which serves everybody well.

## **10. Summary**

The training of the next generation of plumbers through the apprenticeship system within Australia is working well. It is producing well trained plumbing professionals for the future. Without safe water supplies and sanitation system protecting the health and well being of the community our developed society could not exist.